Chapter – 2

REVIEW OF LITERATURE

Green Field, Lawrence A., (1998) Opined that About 6 in 10 convicted jail inmates said that they had been drinking on a regular basis during the year before the offence for which they were serving time. Nearly 2 out of 3 of these inmates, regardless of whether they drank daily or less often, reported having previously been in a treatment program for an alcohol dependency problem.1

Laberge, Jason C., Nicholas J. Ward (2004) opined that “When an alcoholic beverage is consumed, approximately 20 per cent of the alcohol is absorbed in the stomach and 80 per cent is absorbed in the small intestine (Freudenrich, 2001). After absorption, alcohol enters the bloodstream and dissolves in the water of the blood where it is quickly distributed to body tissues. When alcohol reaches the brain, it affects the cerebral cortex first, followed by the limbic system (hippocampus and septal area), cerebellum, hypothalamus, pituitary gland, and lastly, the medulla, or brain stem. Some of these regions are similar to those affected by cannabis, but alcohol also affects sexual arousal/function and increases urinary output. When BAC is near toxic levels, lower order brain regions are affected, which is often followed by sleepiness, lack of consciousness, coma, or death.”2

The NSDUH Report, (2005) “In 2002 and 2003, an estimated 88.2 percent of persons aged 21 or older (175.6 million) were lifetime alcohol users, whereas an estimated 11.8 percent (23.5 million) were lifetime non-drinkers. Over half of lifetime alcohol users (52.7 percent) had used one or more illicit drug in their lifetime, the average age at first illicit drug use was 19 years for lifetime alcohol users, versus 23 years for lifetime nondrinkers.”3
National Institute on Drug Abuse, Info facts, (2006) “In 2003, 34.9 million Americans age 12 and over reported lifetime use of cocaine, and 7.9 million reported using crack. About 5.9 million reported annual use of cocaine and 1.4 million reported using crack. About 2.3 million reported 30-day use of cocaine and 604,000 reported using crack.

“The percentage of youth ages 12 to 17 reporting lifetime use of cocaine was 2.6 percent in 2003. Among young adults ages 18 to 25, the rate was 15 percent, showing no significant difference from the previous year. However, there was a statistically significant decrease in the rate of lifetime crack use among females in the 12 to 17 age bracket.”

“Cocaine,” The Merck Manual (2007) “Effects differ with different modes of use. When injected or smoked, cocaine produces hyperstimulation, alertness, euphoria, and feelings of competence and power. The excitation and high are similar to those produced by injecting amphetamine. These feelings are less intense and disruptive in users who sniff cocaine powder.

“An overdose may produce tremors, seizures, and delirium. Death may result from MI, arrhythmias, and heart failure. Patients with extreme clinical toxicity may, on a genetic basis, have decreased (atypical) serum cholinesterase, an enzyme needed for clearance of cocaine. The concurrent use of cocaine and alcohol produces a condensation product, cocaethylene, which has stimulant properties and may contribute to toxicity.”

C.M. Milroy; J.C. Clark; A.R.W. Forrest (1996) Some of these deaths are related to overheating. MDMA slightly raises body temperature. This is potentially lethal in hot environments where there is vigorous dancing and the lack of adequate fluid replacement. Many of these tragic deaths are preventable with simple harm
reduction techniques such as having free water available and rooms where people can rest and relax.\textsuperscript{6}

\textbf{E.Gouzoulis – May Frank : J. Daumaun, F.Tuchtenhagen; S.Plez; H.J.Kunent; B.Fimni H. Sass (1998)} Studies have indicated that individuals who have used MDMA may have decreased performance in memory tests compared to nonusers. These studies are presently controversial because they involved people who used a variety of other drugs. Furthermore, it is difficult to rule out possible pre-existing differences among research subjects and controls.\textsuperscript{7}

\textbf{Laboratory Pill Analysis Program, Dance Safe (1998)} One of the recent risks associated with ecstasy is the possibility of obtaining adulterated drugs that may be more toxic than MDMA. Some of the reported deaths attributed to Ecstasy are likely caused by other, more dangerous drugs.\textsuperscript{8}

\textbf{“Club Drugs”, The DWAN Report, (2000)} The Drug Abuse warning Network estimated that ecstasy was involved in -though not necessarily the cause of - nine deaths in 1998. According to DAWN's 2002 mortality report:

“The DAWN metropolitan area profiles include information on, club drugs, as a group, combining all mentions of methylenedioxy methamphetamine (MDMA or Ecstasy), Ketamine, gamma hydroxy butyrate (GHB) and its precursor gamma butyrolactone (GBL), and flunitrazepam (Rohypnol). As in prior years, these substances accounted for very few deaths in any of the DAWN metropolitan areas. Seven metropolitan areas reported to deaths involving these drugs, and only.

Seven metropolitan areas reported more than 5 mentions of club drugs. The areas with the highest numbers in 2002 were New York (19 mentions), Miami (9), Chicago (7), New Orleans (7), Philadelphia (9), Boston (6), and San Diego (6). Club drugs were rarely reported alone.”\textsuperscript{9}
Kriner, Harald, Renate Billeth, Christoph Gollner, Sophe Lachout, Paul Neubauer Rainer Schmid (2001) In an evaluation of on-site pill testing, a European Monitoring Centre for Drugs and Drug Addiction scientific report concluded that “Despite the lack of empirical data- for health systems in general and information and prevention projects in particular –it is crucial to know about new substances and consumption treads, otherwise there is a high risk of losing credibility with well-informed users of psychoactive substances. Pill-testing projects can be an important source of information on new substances and consumption treads as they are in closest possible contact with the relevant scenes, more so than other organisations within the prevention system. They have further, more, an insight into most substances that are actually being consumed, and know who and where, in which manner, and why these substances are being consumed. ‘Pill-testing interventions have to be part of a global strategy for prevention and harm reduction in recreational settings.

‘By using the information from on-site pill-testing interventions, a national warning system could deepen its data pool in terms of social contexts: who are the people consuming these substances, how, where and why are they consuming these substances in this and that particular way and which information can be passed on to potential consumers in a meaningful and successful manner?

“Due to the lack and difficulties of evaluation, on one hand there is still no strict scientific proof for the protective impact of on-site pill testing interventions, but on the other hand there is also no scientific evidence to conclude that such interventions would rather promote drug use or might be used by dealers for marketing purposes. Bringing together pieces of evidence is however often a first step for deciding on new intervention models.”
“DEA Approves Trail use of Ecstasy in Tauma Cases, (2004) Some assertions about the negative health effects of MDMA use are exaggerated, and researchers have been forced to retract their more extreme claims. Dr. George Ricuarte wrote the journal Science on Sept.12,2003: “We write to retract our report “Severe dopaminergic neurotoxicity in primates after a common recreational dose regimen of MDMA (“ecstasy”)” (1), following our recent discovery that the drug used to treat all but one animal in that report came from a bottle that contained (+)-methamphetamine instead of the intended drug, (+)MDMA. Notably, (+)-methamphetamine would be expected to produce the same pattern of combined dopaminergic/serotonergic neurotoxicity (2) as that seen in the animals reported in our paper(1)”.

Tompson, Eric, Ph.D., Berger, Markc., Ph.D., and Allen, Sleven N. (1998) In a July 1998 Study issued by the center for Business and Economic Research at the University of Kentucky, Researchers Estimated that if Kentucky again became the main source for industrial hemp seed (as it was in the past) the state could earn the following economic benefits.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Full time jobs created</th>
<th>Workers Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Source for certified industrial seeds only</td>
<td>69 Jobs</td>
<td>$1,300,000.00</td>
</tr>
<tr>
<td>Certified seeds, plus one processing facility</td>
<td>303 jobs</td>
<td>$6,700,000.00</td>
</tr>
<tr>
<td>Certified seeds, plus two processing facilities</td>
<td>537 jobs</td>
<td>$12,000,000.00</td>
</tr>
<tr>
<td>Certified seeds, one processing facility, one industrial hemp paper-pulp plant</td>
<td>771 jobs</td>
<td>$17,600,000.00</td>
</tr>
</tbody>
</table>
West, David P. (1998) According to David West, PhD. “The THC levels in industrial hemp are so low that no one could ever get high from smoking it. Moreover, hemp contains a relatively high percentage of another cannabinoid, CBD that actually blocks the marijuana high. Hemp it turns out is not only on marijuana; it could be called ‘antimarijuana’. 13

Terence Chea, Associated Press (2004) In February 2004, the 9th Circuit Court of Appeals ruled that the Drug Enforcement Administration cannot ban hemp products. The Associated Press reported the “On Friday, the though the DEA has regulatory authority over marijuana and synthetically derived tetrahydro-cannabinol, or THC the agency did not follow the law in asserting authority over all hemp food products as well. They cannot regulate naturally –occurring THC not contained within or derived from marijuana, the court ruled, nothing its not possible to get high from products with only trace amounts of the mind-altering chemical. Hemp is an industrial plant related to marijuana. Fiber from the plant related to marijuana. Fiber from the plant long has been used to make paper, clothing, rope and other products. Its oil is found in body-care products such as lotion, soap and cosmetics and in a host of foods, including every bars, waffles, milk free cheese, veggie burgers and bred. The case is Hemp industries Association Drug Enforcement Administration, number 01-71662.14

Rawson, Jean M., (2005) “Approximately 30 countries in Europe, Asia, and North America currently permit farmers to grow hemp, although most banned production for certain periods of time in the past. The United States is the only developed nation in which industrial hemp is not an established crop. Great Britain lifted its ban in 1993 and Germany followed suit in 1996. In order to help re-establish a hemp industry, the European Union administered a subsidy program in the 1990s for hemp fiber production.
“In 1998, Canada authorised production for commercial purposes, following a three-year experimental period and a 50-year prohibition. As a condition of receiving a license to grow industrial hemp, Canadian farmers are required to register the GPS coordinates of their fields, use certified low-THC hemp seed, allow government testing of their crop for THC levels, and meet or beat a 10ppm standard for maximum allowable THC residue in hemp grain products. Agriculture Canada (the Canadian department of agriculture) estimates that more 100 farmers nationwide are growing hemp, with the majority in central and western Canada.

“Despite the number of nations where industrial hemp production is permissible, the number of acres worldwide devoted to hemp production in 2004 was estimated to be 250,000.”

Hagan, Hoklly, Ph.D., Tiede, Hanne, DVM, MPH, Weiss, Noel S., M.D. (2001) “The potential for blood-borne viral transmission via injection equipment other than syringes was reported in an earlier study of equipment collected in a Miami shooting gallery, Where HIV-1 DNA was detected in rinses from cottons and cookers and in water used to clean paraphernalia and to dissolve drugs. A sterile syringe may become contaminated when the tip of the needle is inserted into a contaminated cooker or when the drug is drawn up through contaminated filtration cotton. This type of injection risk behaviour appears to be quite common, and fewer injection drug users may recognize the hazard of sharing drug preparation equipment than recognize the hazard of sharing syringes. The present study suggests that HCV may be transmitted via the shared use of drug cookers and filtration cotton even without injection with a contaminated syringe.”

Seal, Karen H., Robert Thawley (2005) “This pilot trial is the first in North America to prospectively evaluate a program of naloxone distribution to IDUs to
prevent heroin overdose death. After an 8-hour training, our study participants’
knowledge of heroin overdose prevention and management increased, and they
reported successful resuscitations during 20 heroin overdose events. All victims
were reported to have been unresponsive, cyanotic, or not breathing, but all
survived. These findings suggest that IDUs can be trained to respond to heroin
overdose by using CPR and naloxone, as others have reported. Moreover, we found
no evidence of increases in drug use or heroin overdose in study participants. These
data corroborate the findings of several feasibility studies recommending the
prescription and distribution of naloxone to drug users to prevent fatal heroin
overdose.”

heroin abuse appear soon after a single dose and disappear in a few hours. After an
injection of heroin, the user reports feeling a surge of euphoria (‘rush’) accompanied
by a warm flushing of the skin, a dry mouth, and heavy extremities. Following this
initial euphoria, the user goes ‘on the nod’, an alternately wakeful and drowsy state.
Mental functioning becomes clouded due to the depression of the central nervous
system. Long-term effects of heroin appear after repeated use for some period of
time. Chronic users may develop collapsed veins, infection of the heart lining and
valves, abscesses, cellulitis, and liver disease. Pulmonary complications, including
various types of pneumonia, may result from the poor health condition of the abuser,
as well as from heroin’s depressing effects on respiration.

“Heroin abuse during pregnancy and its many associated environmental factors(e.g.,
lack of prenatal care) have been associated with adverse consequences including low
birth weight, an important risk factor for later developmental delay.”
“Opioids”, The Merele Manual (2007)“A first priority for prevention must be to reduce the frequency of drug overdoses. We should inform heroin users about the risks of combining heroin with alcohol and other depressant drugs. Not all users will act on such information, but if there are similar behavioural changes to those that occurred with needle-sharing overdose deaths could be substantially reduced. Heroin users should also be discouraged from injecting alone and thereby denying themselves assistance in the event of an overdose.”

Ribeland, Densis (2004) A Study of the Swiss heroin prescription program found: “With respect to the group of those treated uninterruptedly during four years, a strong decrease in the incidence and prevalence rates of overall criminal implication for both intense and moderate offenders was found. As to the type of offence, similar diminutions were observed for all types of offences related to the use or acquisition of drugs. Not surprisingly, the most pronounced drop was found for use/possession of heroin. In accordance with self-reported and clinical data (Blaettler, Dobler-Mikola, Steffen, & Uchtenhagen et. al., 1999), the analysis of police records suggest that program participants also tend strongly to reduce cocaine and cannabis use probably because program participants dramatically reduced their contacts with the drug scene when entering the program (Uchtenhagen et al., 1999) and were thus less exposed to opportunities to buy drugs. Consequently, their need for money is not only reduced with regard to heroin but also to other substances. Accordingly, the drop in acquisitive crime, such as drug selling or property crime, is also remarkable and related to all kinds of thefts like shoplifting, vehicle theft, burglary, etc. Detailed analysis indicated that the drop found is related to a practice of police officers towards program participants.
“On average, males had higher overall rates than females in the pretreatment period. However, no marked gender differences were found with regard to intreatment rates. Taken as a whole, this suggests that the treatment had a somewhat more beneficial effect on men than women. This result is corroborated by selfreport data (Killias et al., 2002). With respect to age and cocaine use, no relevant in-treatment differences were observed. As to program dropout, after one year, about a quarter of the patients had left the program, and after four years, about 50 per cent had left. Considering the high-risk profile of the treated addicts, this retention rate is, at least, promising.”

Nordt, Carlos, and Rudolf Stohler (2006) “Heroin misuse in Switzerland was characterised by a substantial decline in heroin incidence and by heroin users entering substitution treatment after a short time, but with a low cessation rate. There are different explanations for the sharp decline in incidence of problematic heroin use. According to Ditton and Frischer, such a steep decline in incidence of heroin use is caused by the quick slowdown of the number of non-using friends who are prepared to become users in friendship chains. Musto’s generational theory regards the decline in incidence more as a social learning effect whereby the next generation will not use heroin because they have seen the former generation go from pleasant early experiences to devastating circumstances for addicts families, and communities later on.”

Naber, Dieter, and Hasen (2006) “The German model project for heroin-assisted treatment of opioid dependent patients is so far the largest randomised control group study that investigated the effects of heroin treatment. This fact alone lends particular importance to the results in the (meanwhile worldwide) discussion of effects and benefits of heroin treatment. For the group of so-called most severely
dependent patients, heroin treatment proves to be superior to the goals of methadone maintenance based on pharmacological maintenance treatment. This result should not be left without consequences. In accordance with the research results from other countries, it has to be investigated to what extent heroin-assisted treatment can be integrated into the regular treatment offers for severely ill i.v. opioid addicts.”

**Nordt, Carles and Rudolf Stohler (2006)** “The incidence of regular heroin use in the canton of Zurich started with about 80 new users in 1975, increased to 850 in 1990, and declined to 150 in 2002, and was thus reduced by 82 per cent. Incidence peaked in 1990 at a similar high level to that ever reported in New South Wales, Australia or in Italy. But only in Zurich has a decline by a factor of four in the number of new users of heroin been observed within a decade. This decline in incidence probably pertains to the whole of Switzerland because the number of patients in substitution treatment is stable, the age of the substituted population is rising, the mortality caused by drugs is declining, and confiscation of heroin is falling. Furthermore, incidence trends did not differ between urban and rural regions of Zurich. This finding is suggestive of a more similar spatial dynamic of heroin use for Switzerland than for other countries.”

**Committee on the prevention of HIV Infection among Injecting Dug users in High Risk Countries (2006)** “Eastern Europe, the Commonwealth of Independent States, and significant parts of Asia are experiencing explosive growth in new HIV infections, driven largely by injecting drug use (UNAIDS, 2006). While the primary route of transmission in most of these areas is sharing of contaminated injecting equipment, sexual and perinatal transmission among IDUs and their partners also plays an important and growing role. In many highly affected countries, rapid growth in the number of IDUs infected with HIV has already created a public health
crisis. Countries where the level of HIV infection is still relatively low have the chance- if they act now- to slow the spread of HIV.”24

**Centers for Disease Control (2005)** According to the CDC, from the beginning of the AIDS epidemic through the end of 2005 there have been a total of 984,155 cases of AIDS reported in the US. Of these, 452,111 were reported to have been transmitted through male-to-male sexual contact, 241,364 were reported to have been transmitted through injection drug use, 65,881 were reportedly transmitted through male-to-male sexual contact and injection drug use, and 163,609 were reported to have been transmitted through “high–risk heterosexual contact.”25

**Centers for Disease Control (2007)** The CDC estimates that of the 12,140 male adults or adolescent AIDS victims who died in 2005,5,929 of the cases were reportedly transmitted through male-to-male sexual contact (MSM),3,159 were reportedly transmitted through injection drug use, 1,364 were reportedly transmitted through male-to-male sexual contact and injection drug use, 1,584 were reportedly transmitted through high-risk heterosexual contact, and 104 were attributed to “other.”26

**Hubbard, R.L., (1984)** The Treatment Outcome Prospective Study (TOPS)-a long-term, large-scale longitudinal study of drug treatment- found that patients drastically reduced heroin use while in treatment, with 10per cent using heroin or other narcotics weekly or daily after just three months in treatment.27

**Effective Medical Treatment of Opiate Addiction (1997)** According to the National Institutes of Health (NIH), “Methadone maintenance treatment is effective in reducing illicit opiate drug use, reducing crime, in enhancing social productivity, and in reducing the spread of viral diseases such as AIDS and hepatitis.”28
Fiellin, David A., Patrick G. O; Connor, MD., S. Schottenfold M.D., (2001) “This study has implications for future treatment of opioid dependence. First, the results support the feasibility of transferring stable patients from NTPs to the offices of trained primary care physicians and extends prior research in this field. These findings, along with recent trials demonstrating the effectiveness of buprenorphine for untreated opioid-dependent patients in primary care settings, offer encouragement regarding the use of primary care offices to help expand access to treatment for opioid dependence.”

Fiellin, David A., M.D., Patrick G., O. Connor, (2001) “Office-based methadone maintenance administered by appropriately trained primary care and specialist physicians has the potential to provide an alternative for selected patients to the current narcotic treatment system that would allow for greater physician involvement and perhaps increased quality of care. Potential benefits from this type of care include increased attention to comorbid medical and psychiatric conditions, decreased stigma associated with the diagnosis and treatment, decreased contact with active heroin users, and increased access to treatment. These benefits may increase patient satisfaction and enhance clinical outcomes.”

Center for Substance Abuse Treatment (2003) “Taken together, the data confirm a correlation between increased methadone distribution through pharmacy channels and the rise in methadone-associated mortality. The data, thus, support the hypothesis that the growing use of oral methadone, prescribed and dispensed for the outpatient management of pain, explains the dramatic increases in methadone consumption and the growing availability of the drug for diversion to illicit use. Although the data remain incomplete, National Assessment meeting participants
concurred that methadone tablets and/or diskettes distributed through channels other than OTPs most likely are the central factor in methadone-associated mortality.”

**Centre for Substance Abuse Treatment (2004)** Buprenorphine can be used for either long-term maintenance or for medically supervised withdrawal (detoxification) from opioids. The preponderance of research evidence and clinical experience, however, indicates that opioid maintenance treatments have a much higher likelihood of long-term success than do any forms of withdrawal treatment. In any event, the immediate goals in starting buprenorphine should be stabilization of the patient and abstinence from illicit opioids, rather than any arbitrary or predetermined schedule of withdrawal from the prescribed medication.”

**Centre for Substance Abuse Treatment (2004)** “A number of clinical trials have established the effectiveness of buprenorphine for the maintenance treatment of opioid addiction. These have included studies that compared buprenorphine to placebo (Johnson et al.1995; Ling et al. 1998; Fudala et al. 2003), as well as comparisons to methadone (e.g. Johnson et al. 1992; Ling et al. 1996; Paniet al. 2000; Petitjeanet al. 2001; Schottenfeld et al.1997;Strain et al. 1994b) and to methadone and levo-alpha-acetyl-methadol (LAAM) (Johnson et al. 2000). Results from these studies suggest that buprenorphine in a dose range of 8-16 mg a day sublingually is as clinically effective as approximately 60 mg a day of oral methadone, although it is unlikely to be as effective as full therapeutic doses of methadone (e.g., 120 mg per day) in patients requiring higher levels of full agonist activity for effective treatment.

“A meta-analysis comparing buprenorphine to methadone (Barnett et al.2001) concluded that buprenorphine was more effective than 20-35 mg of methadone but
have as robust an effect as 50-80 mg methadone—much the same effects as the individual studies have concluded.”

Fiellin, David A, Patrick G. O’Connor, MD, Max (2001) “Our results demonstrate that methadone maintenance using weekly physician office-based dispensing is feasible, that treatment retention and patient and clinician satisfaction are high, and that illicit drug use does not differ significantly compared with continued treatment in an NTP. Stable patients demonstrated high functional status and low levels of health and social service use on transfer from an NTP to office-based care. The high level of patient and clinician satisfaction with office-based care and the outcomes observed with office-based treatment run counter to concerns regarding the potential quality of this type of care and the ability to identify a group of physicians interested in providing treatment for opioid-dependent patients.”

National Drug Threat Assessment (2004) “Further contributing to the threat posed by the trafficking and abuse of methamphetamine, some chemicals used to produce methamphetamine are flammable, and improper storage, use, or disposal of such chemicals often leads to clandestine laboratory fires and explosions. National Clandestine Laboratory Seizure system (NCLSS) 2003 data show that there were 529 reported methamphetamine laboratory fires or explosions nationwide, a slight decrease from 654 reported fires or explosions in 2002.”

National Drug Threat Assessment (2004) “Toxic chemicals used to produce methamphetamine often are discarded in rivers, fields, and forests, causing environmental damage that results in high cleanup costs. For example, DEA’s annual cost for cleanup of clandestine laboratories (almost entirely methamphetamine laboratories) in the United States has increased steadily from FY
1995 ($2 million), to FY 1999 ($12.2 million), to FY 2002 ($23.8 million). Moreover, the Los Angeles County Regional Criminal Information Clearinghouse, a component of the Los Angeles HIDTA, reports that in 2002 methamphetamine laboratory cleanup costs in the combined Central Valley and Los Angeles HIDTA areas alone reached $3,909,809. Statewide, California spent $4,974,517 to remediate methamphetamine laboratories and dumpsites in 2002.\textsuperscript{36}

\textbf{Testimony of Commissioner Micheal Compion, (2005)} “80 percent of all methamphetamine in the United States comes from super labs in Mexico and California. However, the purity of that methamphetamine ranges from 15 percent to 20 percent. Individuals who manufacture meth, often dubbed ‘cookers’ usually only make about an ounce for personal use, but the product is about 85 percent to 95 percent pure.”\textsuperscript{37}

\textbf{Rockville, M.D., (2004)} “The number of new users stimulants generally increased during the 1990s, but there has been little change since 2000. Incidence of methamphetamine use generally rose between 1992 and 1998. Since then, there have been no statistically significant changes.”\textsuperscript{38}

\textbf{Rockville, M.D., (2006)} “The rates for past month and past year methamphetamine use did not change between 2004 and 2005, but the lifetime rate declined from 4.9 to 4.3 percent. From 2002 to 2005, decrease was seen in lifetime (5.3 to 4.3 percent) and past year (0.7 to 0.5 percent) use, but not past month use (0.3 percent in 2002 vs. 0.2 percent in 2005). Although the number of past month users has remained steady since 2002, the number of methamphetamine users who were dependent on or abused some illicit drug did rise significantly during this period, from 164,000 in 2002 to 257,000 in 2005.”\textsuperscript{39}
Rockville, M.D., (2006) “The number of recent new users of methamphetamine taken non-medically among persons aged 12 or older was 192,000 in 2005. Between 2002 and 2004, the number of methamphetamine initiates remained steady at around 300,000 per year, but there was a decline from 2004 (318,000 initiates) to 2005. The average age of new methamphetamine users aged 12 to 49 was 18.9 years in 2002, 20.4 years in 2003, 20.6 years in 2004, and 18.6 years in 2005.”

Amphetamine”, The Merk Manual (2007) “Amphetamine abusers are prone to accidents, because the drug produces excitation and grandiosity followed by excess fatigue and sleeplessness. Taken IV, amphetamine may lead to serious antisocial behaviour and can precipitate a schizophrenic episode.”

Amphetamine, “The Merk Manual (2007) “An exhaustion syndrome occurs with repeated use of methamphetamine, involving intense fatigue and need for sleep after the stimulation phase. Methamphetamine can also produce a psychosis in which the person misinterprets others’ actions, hallucinates, and prolonged depression, during which suicide is possible. Methamphetamine use has also led to deaths attributed to severe dehydration, disseminated intravascular coagulation, and renal failure. Users have a high rate of severe tooth decay affecting multiple teeth; causes involve decreased salivation, acidic combustion products, and poor oral hygiene.”

Janet E Joy, Stanley J, Watson, Jr., and Johan A Benson (1999) A 1999 federal report conducted by the Institute of Medicine found that, “For most people, the primary adverse effect of acute marijuana use is diminished psychomotor performance. It is, therefore, inadvisable to operate any vehicle or potentially dangerous equipment while under the influence of marijuana, THC, or any cannabinoid drug with comparable effects.”

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The Government’s Drug Policy (2002) Since 1969, government-appointed commissions in the United States, Canada, England, Australia, and the Netherlands have concluded, after reviewing the scientific evidence, that marijuana’s dangers had previously been greatly exaggerated, and urged lawmakers to drastically reduce or eliminate penalties for marijuana possession.44

Grant, Ignor, et. Al.,(2003) “These results can be interpreted in several ways. A statistically reliable negative effect was observed in the domain of learning and forgetting, suggesting that chronic long-term cannabis use results in a selective memory defect. While the results are compatible with this conclusion, the effect size for both domains was of a very small magnitude. The ‘reallife’ impact of such a small and selective effect is questionable. In addition, it is important to note that most users across studies had histories of heavy longterm cannabis consumption. Therefore, these findings are not likely to more limited administration of cannabis compounds, as would be seen in a medical setting.”45

Fergussion, David M., John Harwood & Elizabeth M. Rider (2005) According to research published in the journal Addition, “First, the use of cannabis and rates of psychotic symptoms were related to each other, independently of observed / non observed fixed covariates and observed time dynamic factors. Secondly, the results of structural equation modelling suggest that the direction of causation is that the use of cannabis leads to increases in levels of psychotic symptoms rather than psychotic symptoms increasing the use of cannabis. Indeed, there is a suggestion from the model results, that increases in psychotic symptoms may inhibit the use of cannabis.”46
Rockville, MD : (2000) “In addition to the effects of the drug itself, street heroin may have additives that do not readily dissolve and result in clogging the blood vessels that lead to the lungs, liver, kidneys, or brain. This can cause infection or even death of small patches of cells in vital organs.”

Zador, Deborah, Sunjic, Sandra and Darke, Shane (2000) “The disadvantage of continuing to describe heroin-related fatalities as ‘overdose’ is that it attributes the cause of death solely to heroin and detracts attention from the contribution of other drugs to the cause of death. Heroin users need to be educated about the potentially dangerous practice of concurrent polydrug and heroin use.”

Seal, Karen H., Robert Thauley (2005) “This pilot trail is the first in North America to prospectively evaluate a program of naloxone distribution to IDUs to prevent heroin overdose death. After an 8-hour training, our study participants’ knowledge of heroin overdose prevention and management increased, and they reported successful resuscitations during 20 heroin overdose events. All victims were reported to have been unresponsive, cyanotic, or not breathing, but all survived. These findings suggest that IDUs can be trained to respond to heroin overdose by using CPR and naloxone, as others have reported. Moreover, we found no evidence of increases in drug use or heroin overdose in study participants. These data corroborate the findings of several feasibility studies recommending the prescription and distribution of naloxone to drug users to prevent fatal heroin overdose.”

Opioids, The Merck Manual, (2007) “Acute intoxication (overdose) is characterized by euphoria, flushing, itching (particularly with morphine), miosis, drowsiness, decreased respiratory rate and depth, hypotension, bradycardia, and decreased body temperature.”
Cocaine, The Merck Manual (2007) “An overdose [of cocaine] may produce tremors, seizures, and delirium. Death may result from MI, arrhythmias, and heart failure. Patients with extreme clinical toxicity may, on a genetic basis, have decreased (atypical) serum cholinesterase, an enzyme needed for clearance of cocaine. The concurrent use of cocaine and alcohol produces a condensation product, cocaethylene, which has stimulate properties and may contribute to toxicity.”51

Amphetamine, The Merck Manual (2007) “Repeated use of amphetamines has been shown to cause death of large numbers of brain cells. Repeated use also induces dependence. Tolerance develops slowly, but amounts several hundred-fold greater than the amount originally used may eventually be ingested or injected. Tolerance to various effects develops unequally, so that tachycardia and enhanced alertness diminish, but hallucinations and delusions may occur. However, even massive doses are rarely fatal. Long-term users have reportedly injected as much as 15,000 mg of amphetamine in 24 h without observable acute illness.”52

Amphetamine, The Merck Manual (2007) “People in the acute agitated psychotic state, with paranoid delusions and auditory and visual hallucinations, respond well to phenothiazines; chlorpromazine 25 to 50 mg IM rapidly reverses this state but may produce severe postural hypotension. Haloperidol 2.5 to 5 mg IM is effective: it rarely produces hypotension but may produce an alarming acute extrapyramidal motor reaction. Usually, reassurance and a quite, nonthreatening environment are conductive to recovery and are often all that is needed. Ammonium chloride 1 g po q2 to 4 h to acidify the urine hastens amphetamine excretion.”53
Amphetamine, The Merk Manual (2009) “A paranoid psychosis may result from long-term use of high IV or oral doses. Rarely, the psychosis is precipitated by a single high dose or by repeated moderate doses. Typical features include delusions of persecution, ideas of reference, and feelings of omnipotence. People who use high IV doses usually accept that they will eventually experience paranoia and often do not act on it. Nevertheless, with very intense drug use or near the end of weeks of use, awareness may fail and the user may respond to the delusions. Recovery from even prolonged amphetamine psychosis is usual. Thoroughly disorganized and paranoid users recover slowly but completely. The more florid symptoms fade within a few days or weeks, but some confusion, memory loss, and delusional ideas commonly persist for months.”

Centre for substance Abuse Treatment (2003) :“Still methadone is a potent drug; fatal overdoses have been reported over the years (Baden, 1970; Gardner, 1970; Clark, et al., 1995; Drummer et al., 1992). As with most other opioids, the primary toxic effect of excessive methadone is respiratory depression and hypoxia, sometimes accompanied by pulmonary edema and/or aspiration pneumonia (White and Irvine, 1999; Harding-pink, 1993). Among patients in addiction treatment, the largest proportion of methadone-associated deaths have occurred during the drugs induction phase, usually when (1) treatment personnel overestimate a patient’s degree of tolerance to opioid, or (2) a patient uses opioids or other central nervous system (CNS) depressant drugs in addition to the prescribed methadone (Karch and Stephens, 2000; Caplehorn, 1998; Harding-pink, 1991; Davoli, et al., 1993). In particular, researches have called attention to the ‘poison cocktail’ resulting from the intake of multiple psychotropic drugs (Borron, et al., 2001; Haberman, et al., 1995) such as alcohol, benzodiazepines, and other opioids. When used alone, many of
these substances are relatively moderate respiratory depressants; however, when combined with methadone, their additive or synergistic effects can be lethal (Kramer, 2003; Payte and Zweben, 1998). “It is important to note that post-mortem blood concentrations of methadone do not appear to reliably distinguish among individuals who have died from methadone toxicity and those in whom the presence of methadone is purely coincidental (Drummer, 1997; Caplan, et al., 1983).”

Rockville, M.D., (2004) Three primary scenarios characterize current reports of methadone-associated mortality:

a. “In the context of legitimate patient care, methadone accumulates to harmful serum levels during the first few days of treatment for addiction or pain (that is, the induction period before methadone steady state is achieved or tolerance develops).

b. “Illicitly obtained methadone is used by some individuals who have diminished or no tolerance to opioids and who may use excessive and/or repetitive doses in an attempt to achieve euphoric effects.

c. “Methadone- either licitly administered or illicitly obtained- is used in combination with other CNS depressant agents (such as benzodiazepines, alcohol, or other opioids).”

Ethanol Overdose, (2001) According to the US National Library of Medicines MEDLINEplus Medical Encyclopedia, Ethanol overdose is defined as “poisoning from an overdose of ethanol secondary to excessive consumption of alcoholic beverages.” Symptoms of overdose include slowed respirations, vomiting, abdominal pain, intestinal bleeding, stupor, and coma. They advise that “If able to rouse an adult who has overconsumed alcohol, move the person to a comfortable
place to sleep off the effects. Make sure the person won’t fall, get hurt, and is not lying in vomit. If the patient is semi-conscious or unconscious, emergency assistance may be needed. WHEN IN DOUBT, CALL for medical help. DO NOT INDUCE VOMITING UNLESS INSTRUCTED TO DO SO BY poison control, because an individual can accidentally inhale vomit into the lungs.” [Emphasis in original] The NLM notes that “In cases of acute toxic alcohol consumption, survival over 24 hours usually indicates recovery will follow.”

Hoyert, Donna I. Ph.D., Heron, (2006) “In 2003, a total of 20,687 persons died of alcohol-induced causes in the United States (Tables 23 to 24). The category ‘alcohol-induced causes’ includes not only deaths from dependent and nondependent use of alcohol, but also accidental poisoning by alcohol. It excludes unintentional injuries, homicides, and other causes indirectly related to alcohol use as well as deaths due to fetal alcohol syndrome.”

Drug Abuse Warning Network DAWN (1999) An exhaustive search of the literature finds no deaths induced by marijuana. The US Drug Abuse Warning Network (DAWN) records instances of drug mentions in medical examiners’ reports, and though marijuana is mentioned, it is usually in combination with alcohol or other drugs. Marijuana alone has not been shown to cause an overdose death.

Iversen, Leslie L., Ph.D. FRS (2000) “Tetrahydrocannabinol is a very safe drug. Laboratory animals (rats, mice, dogs, monkeys) can tolerate doses of up to 1,000 mg/kg (milligrams per kilogram). This would be equivalent to a 70 kg person swallowing 70 grams of the drug- about 5,000 times more than is required to produce a high. Despite the widespread illicit use of cannabis there are very few if any instances of people dying from an overdose. In Britain, official government
statistics listed five deaths from cannabis in the period 1993-1995 but on closer examination these proved to have been deaths due to inhalation of vomit that could not be directly attributed to cannabis (House of Lords Report, 1998). By comparison with other commonly used recreational drugs these statistics are impressive.\(^{60}\)

**Welch, Ronald H., and Angulo, Carlos T., (2000)** “Black and Hispanic Americans, and other minority groups as well, are victimized by disproportionate targeting and unfair treatment by police and other front-line law enforcement officials; by racially skewed charging and plea bargaining decisions of prosecutors; by discriminatory sentencing practices; and by the failure of judges, elected officials and other criminal justice policy makers to redress the inequities that become more glaring every day.”\(^{61}\)

**Back, Allen J., Ph.D., and Harrison, (2006)** Reports of sexual violence varied across systems and sampled facilities, with every state prison system except New Mexico reporting at least one allegation of sexual violence. Among the 347 sampled local jails, 131 (38 per cent) reported an allegation. About 42 per cent of the 36 sampled privately operated prisons and jails reported at least one allegation.

“Combined, the 2005 survey recorded 5,247 allegations of sexual violence. Taking into account weights for sampled facilities, the estimated total number of allegations for the Nation was 6,241 Expressed in terms rates, there were 2.83 allegations of sexual violence per 1,000 inmates held in 2005, up from 2.43 per 1,000 inmates held in prisons, jails, and other adult correctional facilities in 2004. Prison systems reported 74 per cent of all allegations; local jails, 22 per cent; private prisons and jails, 3 per cent and other adult facilities, 1 per cent.”\(^{62}\)
Califano, Joseph, *Behind Bans* (1998) A study by the National Centre on Addiction and Substance Abuse at Columbia University confirms what many criminologists have long known: alcohol is associated with more violent crime than any illegal drug, including crack, cocaine, and heroin. Twenty-one percent of violent felons in state prisons committed their crimes while under the influence of alcohol alone. Only 3 per cent were high on crack or powder cocaine alone and only 1 per cent were using heroin alone.63

Greenfield, Lawrence A., (1998) Federal statistics show that a large percentage of criminal offenders were under the influence of alcohol alone when they committed their crimes (36.3 per cent, or a total of 1,919,251 offenders). Federal research also shows for more than 40 per cent of convicted murders being held in either jail or State prison, alcohol use was a factor in the crime.64

PRS Consultancy Group, (2002) Law enforcement authorities in the UK conducted an experiment in policing in the London borough of Lambeth, wherein cannabis violations were given a low priority. Researches for PRS Consultancy Group undertook an evaluation of the program at the request of the Borough police Commander. The researchers found that: “The measures of police activity demonstrate that the policy has succeeded in releasing resources, and that activity against more serious offences has increased. “During the 6 months of the evaluation, Lambeth officers issued 450 warnings. This released at least 1350 hours of officer time (by avoiding custody procedures and interviewing time), equivalent to 1.8 full-time officers. A further 1150 hours of CJU staff time was released by avoiding case file preparation.
“In comparison with the same 6 months in 2000, Lambeth officers recorded 35 per cent more cannabis possession offences and 11 per cent more for trafficking. In adjoining Boroughs possession offences fell by 4 per cent and trafficking fell by 34 per cent.

“Lambeth also increased its activity against Class A drugs relative to adjoining Boroughs.”65

Wood Evan, Partricia M., Spittal, Willsmall (2004) The Canadian Medical Association Journal published research on the impact of a police crackdown on a public illicit drug market in the Downtown Eastside (DTES) section of Vancouver, British Columbia, Canada. The researches found that: “We detected no reduction in drug use frequency or drug price in response to a large-scale police crackdown on drug users in Vancouver’s DTES. The evidence that drugs became more difficult to obtain was consistent with reports of displacement of drug dealers and was supported by the significantly higher rates of reporting that police presence had affected where drugs were used, including changes in neighbourhood and increases in use in public places. These observations were validated by examination of needle-exchange statistics.

“Our findings are consistent with those showing that demand for illicit drugs enables the illicit drug market to adapt to and overcome enforcement-related constraints. Although evidence suggested that police presence made it more difficult to obtain drugs, this appeared to be explained by displacement of drug dealers.”66

Bureau of Labour Statistics (1991) The Bureau of Labour Statistics noted the downward trend in drug testing after a large survey of 145,000 businesses. It found that “overall about 1 of 3 establishments that reported having a drug testing program
in 1988 said they did not have one in 1990.” 46 per cent of the companies with under 50 employees dropped drug testing Programs.\textsuperscript{67}

**Work Place Substance Abuse Testing (1992)** One reason drug testing is not used by some employers is the cost. One electronics manufacturer estimated that the cost of finding each positive result was $20,000. After testing 10,000 employees he only found 49 positive results. A congressional committee estimated that the cost of each positive in government testing was $77,000 because the positive rate was only 0.5 per cent.\textsuperscript{68}

**American Management Association (2000)** The American Management Association in its survey of companies on workplace surveillance and medical testing reports the following percentages of companies who conduct drug tests.\textsuperscript{69}

<table>
<thead>
<tr>
<th>Business Category</th>
<th>Testing of New Hires</th>
<th>Testing of All Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Services</td>
<td>35.8per cent</td>
<td>18.8per cent</td>
</tr>
<tr>
<td>Business &amp; Professional Services</td>
<td>36.0per cent</td>
<td>18.45</td>
</tr>
<tr>
<td>Other Services</td>
<td>60.3per cent</td>
<td>34.7per cent</td>
</tr>
<tr>
<td>Wholesale &amp; Retail</td>
<td>63.0per cent</td>
<td>36.8per cent</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>78.5per cent</td>
<td>42.2per cent</td>
</tr>
</tbody>
</table>

**French, Michael T., M. Christopher Roebuck (2001)** According to a study funded by the Robert Wood Johnson Foundation and published by the Southern Economic Journal in 2001, “In conclusion, this study found that chronic drug use was significantly related to employment status for men and women. On the other hand, male chronic drug users were less likely to participate in the labour force, but no
significant relationship existed between chronic drug use and labor force participation for females. Perhaps the most important finding of this study, however, was the lack of any significant relationships between nonchronic drug use, employment, and labor force participation. An implication of this finding is that employers and policy makers should focus on problematic drug users in the same way that they focus on problematic alcohol users.”

National Work Rights Institute, (2004) “Few employers have used impairment testing, and information concerning that experience is very limited and extremely difficult to obtain. The available information, however, indicates that impairment testing is not just a better answer on paper, but in practice as well. Employers who have used impairment testing consistently found that it reduced accidents and was accepted by employees. Moreover, these employees consistently found that it was superior to urine testing in achieving both of these objectives.”

Substance Abuse and Mental Health Services (1999) An estimated 971 thousand Americans used crack cocaine in 1998. Of those, 462 thousand were white, 324 thousand were Black, and 157 thousand were Hispanic.

United Nations Office on Drugs and Crime (UNODC) (2006) “The paucity of the data on which the annual prevalence estimates are based does not allow for the identification of clear global trends in the short term. As an imperfect complement, UNODC relies on the perception of the trends in their countries by national experts. A global analysis of these perceptions suggest that the strongest increase over the last decade was for cannabis use and ATS, and at lower levels for opiates and cocaine. After some stabilization in 2003, ATS drug use was perceived as having increased again, reflecting the prevailing view in East and South-East Asia that methamphetamine use has started rising again.
“Opiate abuse trends flattened in recent years. However, by 2004, opiate abuse perceptions again went upwards, as many countries around Afghanistan experienced a renewed supply-push following Afghanistan’s good opium harvests of 2003 and 2004. In other parts of the world, including North America and Western Europe, abuse levels remained constant for opiates. After years of increases, cocaine use is perceived as declining slightly, notably in the Americas. In Europe, by contrast, cocaine use continues to expand.”\textsuperscript{73}

\textbf{Substance Abuse and Mental Health Services (2006)} An estimated 35,041,000 Americans aged 12 or over (14.4 per cent of the US population aged 12 and over) used an illicit drug during the previous year.\textsuperscript{74}
REFERENCES

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Cocaine and Crack


Ecstasy : What the Evidence Shows


Hemp


**Hepatitis C & Drug Use**


**Heroin**


Heroin-Assisted Therapy/Heroin Maintenance


HIV/AIDS & Injection Drug Use


**Methadone & Buprenorphine Treatment**


Methamphetamine


Marijuana


Overdose Heroin


**Cocaine**


**Overdose**

**METHAMPHETAMINE**


METHADONE


Alcohol


Marijuana


**Civil and Human Rights**


**Crime**


**Drug Testing-Employment, Schools, and Benefits**


Drug Use Estimates

